



FACT SHEET



JNTF FACT SHEET 00-013

Theater Missile Defense Interoperability

JNTF MISSION

Theater ballistic missiles are a major threat to U.S. forces deployed almost anywhere in the world. To counter this threat, an extremely sophisticated family of Theater Missile Defense (TMD) weapon systems is being developed. To achieve maximum effectiveness the TMD Family of Systems (FoS) must be highly interoperable to counter a broad spectrum of threats, environments, and deployment scenarios.

Under the sponsorship of the Ballistic Missile Defense Organization (BMDO), the Joint National Test Facility (JNTF) provides the only Hardware-in-the-Loop (HWIL) test capability available to test TMD FoS interoperability and identify issues which exist between the separately developed TMD systems. A JNTF Hardware-in-the-Loop test using the Theater Missile Defense System Exerciser (TMDSE) is more economical than live flight tests and allows TMD systems to explore interoperability issues in areas not possible during live flight tests, including multiple engagements and stressing environments. Considering test range limitations and logistical considerations associated with a live fire test - a JNTF HWIL test provides an economical solution to examine interoperability between the TMD systems.



JNTF HWIL tests using the TMDSE tool can also execute Battle Management Command, Control, Communications, and Intelligence (BM/C3I) testing with tactical systems using a “gateway” emulation of the Joint Data Network (JDN), which is developed by the Navy Space & Warfare (SPAWAR) System Center.

TMDSE

TMDSE is a very cost effective HWIL test capability. It directly interfaces with each weapon system via its existing tactical driver and requires no co-location of specified test articles. It exercises tactical hardware and software using real-world tactical communications.

Using Distributed Interactive Simulation Protocol Data Units, TMDSE injects a real-time common threat scenario into geographically distributed tactical sensors and weapon systems. The tactical systems respond in real-time via their respective tactical communication data nets, including Tactical Information Broadcast Service/Tactical and Related Applications Data

Dissemination System (TIBS/TDDS) and the JDN, allowing each individual TMD system to operate synergistically in a tactically realistic battlefield.

The TMDSE HWIL test user can pick from a complete menu of testing options, from test requirements definition and planning through test execution, data collection, analysis, storage and reporting.

Although built for BMDO TMD HWIL testing, TMDSE can play a role in Major Defense Acquisition Program (MDAP) activities with risk reduction testing and to verify milestone exit criteria.

TMDSE currently has connectivity to Phased Array Tracking to Intercept of Target (PATRIOT) in Huntsville and Ft. Bliss, Joint Tactical Ground Station (JTAGS), Theater Air Command and Control Simulation Facility (TACCSF), Theater High Altitude Area Defense (THAAD), Aegis, Airborne Warning and Control System (AWACS), Aerospace Fusion Center (AFC), and the Marine Early Warning Center (EWC).

CAPABILITIES

The JNTF has a comprehensive capability to perform HWIL interoperability testing including:

- Pretest planning and documentation
- Test execution using TMDSE
- On-site test support
- Sophisticated post-test analyses and reporting using:
 - JNTF-developed post-processing tools
 - Numerous system and subject matter experts.

HWILTs

The JNTF maintains an aggressive schedule of planning and executing HWIL tests. Analysis of data gathered from several HWIL tests indicates there are several areas of interoperability which need to be addressed if the US expects to field an effective Theater Ballistic Missile Defense system.

STATUS

The JNTF HWILT interoperability testing capability is fully operational using TMDSE Build 3. Successive TMDSE builds will add functionality, fidelity, and additional operational facilities to the execution of HWIL tests.

AVAILABILITY

If you would like more information about the JNTF Theater Missile Defense Interoperability program, please contact us at:

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TMD System Exerciser Build 3

